

## **AMENDMENTS TO THE CLAIMS:**

The listing of claims will replace all prior versions, and listings of claims in the application:

### **LISTING OF THE CLAIMS**

1. (Currently Amended) An Anticorrosion coating composition of metallic parts based on particulate metal in aqueous dispersion comprising, in the following proportions (percentages by mass weight):

[-]] at least one of an organic titanate and/or an organic zirconate [[:]] in an amount from 0.3 to 24%;

[-]] a particulate metal or a mixture of particulate metals [[:]] in an amount from 10 to 40%;

[-]] a silane-based binder [[:]] in an amount from 1 to 25%; and

[-]] water [[:]]—q.s.p. in an amount sufficient to produce 100%;

wherein the sum of the organic titanate and/or zirconate and of the silane-based binder is between 5 and 25%.

2. (Currently Amended) The Gcomposition according to Gclaim 1, characterized in that wherein (i) the organic titanate is chosen selected from the group constituted by the consisting of titanates compatible in organic phase, and the titanates compatible in aqueous phase, and combinations thereof, and (ii) the organic zirconate is chosen selected from the group constituted by the consisting of zirconates compatible in organic phase, and the zirconates compatible in aqueous phase, and combinations thereof.

3. (Currently Amended) The Gcomposition according to Gclaim 2, characterized in that wherein the titanates compatible in organic phase are C<sub>1</sub>-C<sub>8</sub> tetraalkyl titanates, advantageously chosen from the group comprising tetraethyl titanate, tetra-n-butyl titanate and octylene glycol titanate, and the zirconates compatible in organic phase are C<sub>1</sub>-C<sub>8</sub> tetraalkyl zirconates, advantageously chosen from the group comprising tetra-n-propyl zirconate and tetra-n-butyl zirconate.

4. (Currently Amended) The composition according to claim 2, characterized in that wherein the titanates compatible in aqueous phase are chelated organic titanates, advantageously chosen from the group constituted by triethanolamine titanates, and the zirconates compatible in aqueous phase are chelated organic zirconates, advantageously the triethanolamine zirconates.

5. (Currently Amended) The composition according to claim 1 any one of the preceding claims, characterized in that wherein the particulate metal is chosen selected from the group consisting of zinc, and aluminium, as well as their alloys and their mixtures or their alloys with manganese, magnesium, tin or Galfan zinc alloys, aluminium alloys, zinc and aluminium alloys, and combinations thereof.

6. (Currently Amended) The composition according to claim 1 any one of the preceding claims, characterized in that wherein the silane-based binder comprises a silane having carrying at least one hydrolysable hydroxyl function in hydroxyl function chosen from a C<sub>1</sub>-C<sub>4</sub> alkoxy radical.

7. (Currently Amended) The composition according to claim 1 any one of the preceding claims, characterized in that wherein the silane additionally carries includes an epoxy function.

8. (Currently Amended) The composition according to claim 7, characterized in that wherein the silane is chosen from selected from the group consisting of di- or trimethoxysilane with an epoxy function, or di- or triethoxysilane with an epoxy function, as well as their and mixtures thereof, in particular gamma-glycidoxypropyltrimethoxysilane or beta-(3,4-epoxycyclohexyl)ethyltrimethoxysilane.

9. (Currently Amended) The composition according to claim 1, further comprising any one of the preceding claims, characterized in that it additionally comprises 1 to 30% by weight of organic solvent or of a mixture of organic solvents, with respect to the total weight of the composition.

10. (Currently Amended) The composition according to claim 9, wherein characterized in that the organic solvent is chosen selected from the group constituted by the consisting of glycolic solvents, such as the glycol ethers, in particular diethylene glycol, triethylene glycol and dipropylene glycol, the acetates, propylene glycol, polypropylene glycol, nitropropane, the alcohols, the ketones, propylene glycol methyl ether, 2,2,4 trimethyl 1,3 pentanediol isobutyrate (texanol), white spirit, as well as their and mixtures thereof.

11. (Currently Amended) The composition according to any one of the preceding claims, characterized in that it additionally comprises claim 1 further comprising 0.1 to 7% by weight of molybdenum oxide, with respect to the total weight of the composition.

12. (Currently Amended) The composition according to claim 1 further comprising to any one of the preceding claims, characterized in that it additionally comprises 0.5 to 10% by weight, with respect to the total weight of the composition, of a reinforcing agent of the an anticorrosion properties chosen reinforcing agent selected from the group constituted by consisting of yttrium, zirconium, lanthanum, cerium, praseodymium, in the form of oxides or of salts thereof, advantageously yttrium oxide  $Y_2O_3$ , or 0.2 to 4% by weight, with respect to the total weight of the composition, of a corrosion inhibitor pigment such as aluminum triphosphate.

13. (Currently Amended) The composition according to claim 1 further comprising at least one of any one of the preceding claims, characterized in that it additionally comprises a thickening agent, advantageously 0.005 to 7% by weight with respect to the total weight of the composition, and/or a wetting agent, advantageously 0.1 to 4% by weight with respect to the total weight of the composition.

14. (Currently Amended) A method for forming an Aanticorrosion coating of metallic parts, characterized in that it is obtained from the method comprising:  
obtaining a coating composition comprising, in the following proportions (percentages by weight): at least one of an organic titanate and an organic zirconate in an amount from 0.3 to 24%, a particulate metal or a mixture of particulate metals in an

amount from 10 to 40%, a silane-based binder in an amount from 1 to 25%, and water in an amount sufficient to produce 100%, wherein the sum of the organic titanate and/or zirconate and of the silane-based binder is between 5 and 25%; according to one of claims 1 to 13, by

forming a coating layer by spraying, soaking-draining or soaking-centrifugation[[,]]; and the coating layer then being subjected

subjecting the coating layer to a baking operation by supply of thermal energy to thereby form the anticorrosion coating, such as by convection, infrared or induction, preferably carried out at a temperature of between 180°C and 350°C, for approximately 10 to 60 minutes by convection or infrared, or for 30 seconds to 5 minutes by induction.

15. (Currently Amended) The method Anticorrosion coating of metallic parts according to Claim 14, characterized in that further comprising, prior to a the baking operation, the coated metallic parts are subjected to a drying operation by supply of thermal energy, such as by convection, infrared or induction, especially at a temperature of between 30 and 250°C by convection or approximately 10 to 30 minutes on line or by induction for 30 seconds to 5 minutes.

16. (Currently Amended) The method Anticorrosion coating of metallic parts according to one of Claims 14 or 15, characterized in that it is applied to the metallic parts to be protected, with wherein the anticorrosion coating has a thickness of the dry film of between 3 µm (11 g/m<sup>2</sup>) and 30 µm (110 g/m<sup>2</sup>) and preferably between 4 µm (15 g/m<sup>2</sup>), and 12 µm (45 g/m<sup>2</sup>), more particularly between 5 µm (18 g/m<sup>2</sup>) and 10 µm (40 g/m<sup>2</sup>).

17. (Currently Amended) A coated Metallic substrate, preferably of steel or of zinc-coated steel or of a base layer of zinc deposited by different methods of application including mechanical deposition, of cast iron or of aluminum, provided comprising with an anticorrosion coating according to one of Claims 14 to 16 formed from a coating composition including in the following proportions (percentages by weight): at least one of an organic titanate and an organic zirconate in an amount from 0.3 to 24%, a particulate metal or a mixture of particulate metals in an amount from 10 to 40%, a silane-based binder in an amount from 1 to 25%, and water in an amount sufficient to produce 100%.

wherein the sum of the organic titanate and/or zirconate and of the silane-based binder is between 5 and 25%.

18. (Currently Amended) An Aaqueous composition of C<sub>1</sub>-C<sub>8</sub> tetraalkyl titanate, intended for the preparation of adapted for use in a coating composition for a metallic substrate in aqueous dispersion, prepared from a water soluble organic solvent, from a binder containing a silane carrying at least one hydrolysable function in hydroxyl function, from a titanate or zirconate compatible in organic phase and from water, in the following proportions (percentages by massweight):

[-]] water-soluble organic solvent [[:]] in an amount from 0 to 20%;

[-]] silane-based binder [[:]] in an amount from 20 to 50%, the silane having at least one hydrolysable hydroxyl function;

[-]] at least one of C<sub>1</sub>-C<sub>8</sub> tetraalkyl titanate and/or zirconate [[:]] in an amount from 5 to 25%, compatible in organic phase; and

[-]] water [[:]]-qsp in an amount sufficient to produce 100%.

19. (Currently Amended) The Gcomposition according to Gclaim 18, characterized in that wherein the water-soluble organic solvent is chosen selected from the group constituted by the consisting of glycolic solvents, such as the glycol ethers, in particular diethylene glycol, triethylene glycol and dipropylene glycol, the acetates, propylene glycol, propylene glycol methyl ether, the alcohols, the ketones, as well as their and mixtures thereof.

20. (Currently Amended) The Gcomposition according to either one of Gclaims 18 and 19, characterized in that wherein the binder comprises a silane carrying at least one hydrolysable hydroxyl function is in hydroxyl function chosen from a C<sub>1</sub>-C<sub>4</sub> alkoxy radical.

21. (Currently Amended) The Gcomposition according to any one of Gclaims 18 to 20, characterized in that wherein the silane additionally carries includes an epoxy function.

22. (Currently Amended) The Gcomposition according to Gclaim 21, characterized in that wherein the silane is chosen from selected from the group consisting of di- or

trimethoxysilane with an epoxy function, and di- or triethoxysilane with an epoxy function, as well as their and mixtures thereof, in particular gamma-glycidoxypropyltrimethoxysilane or beta-(3,4-epoxycyclohexyl)-ethyltrimethoxysilane.

23. (Currently Amended) The composition according to any one of Claims 18 to 22, characterized in that wherein the C<sub>1</sub>-C<sub>8</sub> tetraalkyl titanate is advantageously chosen selected from the group comprising consisting of tetraethyl titanate, tetra-n-butyl titanate, and octylene glycol titanate and mixtures thereof, and the C<sub>1</sub>-C<sub>8</sub> tetraalkyl zirconate is advantageously chosen from the group comprising tetra-n-propyl zirconate and tetra-n-butyl zirconate.

24. (Canceled)

25. (New) The composition according to claim 3 wherein the C<sub>1</sub>-C<sub>8</sub> tetraalkyl titanates are selected from the group consisting of tetraethyl titanate, tetra-n-butyl titanate, octylene glycol titanate, and combinations thereof.

26. (New) The composition according to claim 3 wherein the C<sub>1</sub>-C<sub>8</sub> tetraalkyl zirconates are selected from the group consisting of tetra-n-propyl zirconate, tetra-n-butyl zirconate, and combinations thereof.

27. (New) The composition according to claim 4 wherein the chelated organic titanates are triethanolamine titanates.

28. (New) The composition according to claim 4 wherein the chelated organic zirconates are triethanolamine zirconates.

29. (New) The composition according to claim 5 wherein the alloys include metals selected from the group consisting of manganese, magnesium, tin, and combinations thereof.

30. (New) The composition according to claim 5 wherein the alloys include a eutectic alloy of zinc and aluminium and a trace of rare earth elements.

31. (New) The composition according to claim 6 wherein the hydrolysable hydroxyl function is a C<sub>1</sub>-C<sub>4</sub> alkoxy radical.

32. (New) The composition according to claim 8 wherein the trimethoxysilane is selected from the group consisting of gamma-glycidoxypropyltrimethoxysilane, beta-(3,4-epoxycyclohexyl)ethyltrimethoxysilane, and mixtures thereof.

33. (New) The composition according to claim 10 wherein the glycolic solvents are glycol ethers.

34. (New) The composition according to claim 33 wherein the glycol ethers are selected from the group consisting of diethylene glycol, triethylene glycol, dipropylene glycol, propylene glycol methyl ether, and mixtures thereof.

35. (New) The composition according to claim 10 wherein the glycolic solvents are selected from the group consisting of propylene glycol, polypropylene glycol, and mixtures thereof.

36. (New) The composition according to claim 9 wherein the organic solvent is 2,2,4-trimethyl-1,3-pentanediol isobutyrate (texanol).

37. (New) The composition according to claim 12 wherein the reinforcing agent is yttrium oxide Y<sub>2</sub>O<sub>3</sub>.

38. (New) The composition according to claim 1 further comprising 0.2 to 4% by weight, with respect to the total weight of the composition, of a corrosion inhibitor pigment.

39. (New) The composition according to claim 38 wherein the corrosion inhibitor pigment is aluminium triphosphate.

40. (New) The composition according to claim 13 wherein the thickening agent is present in an amount of 0.005 to 7% by weight with respect to the total weight of the composition.

41. (New) The composition according to claim 13 wherein the wetting agent is present in an amount of 0.1 to 4% by weight with respect to the total weight of the composition.

42. (New) The method according to claim 14 wherein the baking operation by supply of thermal energy includes at least one of convection, infrared, and induction.

43. (New) The method according to claim 14 wherein the baking operation is performed at a temperature between 180°C and 350°C.

44. (New) The method according to claim 43 wherein the baking operation is performed for approximately 10 to 60 minutes by convection or infrared.

45. (New) The method according to claim 43 wherein the baking operation is performed for 30 seconds to 5 minutes by induction.

46. (New) The anticorrosion coating formed by the method according to claim 14.

47. (New) The method according to claim 15 wherein the drying operation by supply of thermal energy includes at least one of convection, infrared, and induction.

48. (New) The method according to claim 47 wherein the drying operation is performed at a temperature between 30°C and 250°C by convection.

49. (New) The method according to claim 47 wherein the drying operation is performed for approximately 10 to 30 minutes on a line.

50. (New) The method according to claim 47 wherein the drying operation is performed for 30 seconds to 5 minutes by induction.

51. (New) The anticorrosion coating formed by the method according to claim 15.

52. (New) The method according to claim 16 wherein the thickness is between 4  $\mu\text{m}$  (15 g/m<sup>2</sup>) and 12  $\mu\text{m}$  (45 g/m<sup>2</sup>).

53. (New) The method according to claim 52 wherein the thickness is between 5  $\mu\text{m}$  (18 g/m<sup>2</sup>) and 10  $\mu\text{m}$  (40 g/m<sup>2</sup>).

54. (New) The anticorrosion coating formed by the method of claim 16.

55. (New) The method according to claim 15 wherein the anticorrosion coating has a thickness of the dry film of between 3  $\mu\text{m}$  (11 g/m<sup>2</sup>) and 30  $\mu\text{m}$  (110 g/m<sup>2</sup>).

56. (New) The method according to claim 55 wherein the thickness is between 4  $\mu\text{m}$  (15 g/m<sup>2</sup>) and 12  $\mu\text{m}$  (45 g/m<sup>2</sup>).

57. (New) The method according to claim 56 wherein the thickness is between 5  $\mu\text{m}$  (18 g/m<sup>2</sup>) and 10  $\mu\text{m}$  (40 g/m<sup>2</sup>).

58. (New) The anticorrosion coating formed by the method of claim 55.

59. (New) The metallic substrate of claim 17 wherein the metallic substrate is selected from the group consisting of steel, cast-iron, and aluminium.

60. (New) The metallic substrate of claim 59 wherein the steel is zinc coated.

61. (New) The composition of claim 19 wherein the glycolic solvents include glycol ethers.

62. (New) The composition of claim 61 wherein the glycol ethers are selected from the group consisting of diethylene glycol, triethylene glycol, dipropylene glycol, and mixtures thereof.

63. (New) The composition of claim 19 wherein the glycolic solvents include propylene glycol, propylene glycol methyl ether, and mixtures thereof.

64. (New) The composition according to claim 19 wherein the hydrolysable hydroxyl function is a C<sub>1</sub>-C<sub>4</sub> alkoxy radical.

65. (New) The composition according to claim 22 wherein the trimethoxysilane is selected from the group consisting of gamma-glycidoxypropyltrimethoxysilane, beta-(3,4-epoxycyclohexyl)ethyltrimethoxysilane, and mixtures thereof.

66. (New) The composition according to claim 18 wherein the C<sub>1</sub>-C<sub>8</sub> tetraalkyl zirconate is selected from the group consisting of tetra-n-propyl zirconate, tetra-n-butyl zirconate, and mixtures thereof.

67. (New) A method for pretreating a substrate prior to receiving an adhesive or coating, the method comprising:

providing a composition comprising in the following proportions (percentages by weight): water-soluble organic solvent in an amount from 0 to 20%, silane-based binder in an amount from 20 to 50% the silane having at least one hydrolysable hydroxyl function, at least one of C<sub>1</sub>-C<sub>8</sub> tetraalkyl titanate and zirconate in an amount from 5 to 25% compatible in organic phase, and water in an amount sufficient to produce 100%;

applying a coating of the composition to the substrate, to thereby pretreat the substrate.

68. (New) A method for sealing a substrate or coated substrate, the method comprising:

providing a substrate or coated substrate;

providing a composition comprising in the following proportions (percentages by weight): water-soluble organic solvent in an amount from 0 to 20%, silane-based binder

in an amount from 20 to 50% the silane having at least one hydrolysable hydroxyl function, at least one of C<sub>1</sub>-C<sub>8</sub> tetraalkyl titanate and zirconate in an amount from 5 to 25% compatible in organic phase, and water in an amount sufficient to produce 100%;

applying a coating of the composition on the substrate, to thereby seal the substrate or coated substrate.

69. (New) A method for passivating a substrate of steel, zinc, aluminium, or steel having a zinc-based coating, the method comprising:

providing a substrate selected from the group consisting of steel, zinc, aluminium, and steel having a zinc-based coating;

providing a composition comprising in the following proportions (percentages by weight): water-soluble organic solvent in an amount from 0 to 20%, silane-based binder in an amount from 20 to 50% the silane having at least one hydrolysable hydroxyl function, at least one of C<sub>1</sub>-C<sub>8</sub> tetraalkyl titanate and zirconate in an amount from 5 to 25% compatible in organic phase, and water in an amount sufficient to produce 100%;

applying a coating of the composition on the substrate, thereby passivating the substrate.

70. (New) A method for improving the adhesion of coatings or adhesives in aqueous phase, the method comprising:

forming a composition comprising in the following proportions (percentages by weight): water-soluble organic solvent in an amount from 0 to 20%, silane-based binder in an amount from 20 to 50% the silane having at least one hydrolysable hydroxyl function, at least one of C<sub>1</sub>-C<sub>8</sub> tetraalkyl titanate and zirconate in an amount from 5 to 25% compatible in organic phase, and water in an amount sufficient to produce 100%;

adding the composition to a coating or adhesive to thereby improve the resulting adhesion of the coating or adhesive.